

**Remarks/Arguments:**

In response to the Office Action dated 2 February 2005, the applicant cancels claim 5 and adds new claim 15. Claim 15 is supported at page 3, paragraph 3 of the specification. No new matter has been added.

The applicant appreciates the indication of allowable subject matter recited in claim 12. The applicant believes, however, that broader protection of the invention is patentable as recited in the independent claims.

The Office Action rejects claims 1, 3-8, and 13 under 35 U.S.C. § 102(b) as anticipated by Thome (U.S. Patent No. 4,602,416). With this new ground of rejection, all previous rejections, including those cited in parent U.S. Patent Application No. 10/008,664, are assumed to have been overcome. The Office Action makes the following statements:

A. "Grey cast iron is broadly understood to require the presence of graphite, which would be expected in view of the high carbon content in the material of Thome, absence of fast quenching, and observed differences in structure between the carbide containing shell layer and the core layer."

B. "The bar of Thome, while not explicitly used as a roll barrel, would be capable of use as a roll barrel."

The applicant respectfully submits that these statements are in error for the reasons identified below.

**A. Thome does not disclose a grey cast iron core**

As quoted above, the Examiner asserts that Thome disclose a grey cast iron core. The applicant submits, however, that the Examiner ignores that the inner core of the rod of Thome is not a grey cast iron. The inner core is steel, namely a steel alloy, with a high carbon content as described in Thome at column 2, lines 52-54:

"As was pointed out above, such a crushing bar is made from a steel with a high carbon content and a high carbide percentage."

Thome characterizes the structure of the inner core of the crushing rod as a steel structure with a high carbon content and a high carbide percentage. In other words, Thome teaches that the inner core is a steel although with a higher carbon content and a higher carbide percentage as is usual for steels. Thome does not state that the inner core rod is characterized by precipitation of carbon in graphite form, as would be understood by one skilled in the art, reading the phrase grey cast iron. (page 229 of *Engineering Materials Technology, Structure, Processing, Properties & Selection*, Second Edition, Jacobs and Kilduff, 1994) Such a precipitation is, however, characteristic for a stable solidification and not for the metastable solidification of steels as evidenced in the attached *Engineering Materials Technology, Structure, Processing* excerpt. The reference of Thome, therefore, does not contain a suggestion that the high carbon content of the steel would lead to precipitation of graphite flakes to such an amount that the structure of the inner core might be called a grey cast iron.

This interpretation of Thome is confirmed further in column 3, lines 24-30 of Thome where it reads:

"The internal structure of the bar of the invention is dendritic with an orientation perpendicular to the cylindrical surface of the bar. Thus, the hardness of the carbides orientated on this direction is greater than their lateral hardness,...Furthermore, the radial dendrite structure ensures sufficient frangibility of the metal to cause it to break into pieces once the diameter of the bar has been reduced below a certain level ... Depending on the applications for which the bars will be used, different compositions may be chosen: Austenitic, martensitic or bainitic, with hardnesses and varying carbide and matrix compositions."

Furthermore, the alloy of Thome comprises between about 3 and 30% chromium (claim 1). As far as a ferrous metal is concerned, the chromium of the steel alloy is 11 to 12% (column 4, lines 51-60). Chromium is a carbide former as is well known in the art. It must be assumed that the high chromium content is responsible for the high carbide percentage. Therefore, Thome fails to disclose or suggest that the high carbon content, although responsible for the high carbide percentage, will lead to graphite precipitation (stable solidification) to an amount that would justify calling Thome's steel alloy a grey cast iron, because such would be in contradiction to the meaning of "steel"

**B. Thome does not contain an enabling disclosure for using the crushing bar as a roll barrel**

The Office Action admits, in the above-quoted passage, that Thome does not disclose a roll barrel. The applicant asserts that Thome therefore does not contain an enabling disclosure for a roll barrel. As required by MPEP § 2121.01, a prior art reference must contain an enabling disclosure to anticipate the claimed invention.

Despite an express disclosure in Thome that the crushing bar could be a roll barrel, the Examiner makes the unsupported statement that the crushing rod of Thome "would be capable of use as a roll barrel." The applicant respectfully disagrees. The applicant finds no suggestion in Thome and the rejection fails to provide any suggestion to one of ordinary skill in the art that the crushing bar of Thome is a roll barrel. For at least this reason, Thome does not disclose each and every limitation of the claimed invention, especially with respect to newly added claim 15. Reconsideration of the independent claims is respectfully requested.

**Conclusion:**

In conclusion, for the identified reasons and arguments set forth above, Thome fails to disclose each and every limitation of the claimed invention. The rejection under 35 U.S.C. § 102(b) must fail. The applicant submits the pending claims are in a condition for allowance and respectfully requests early notice to that effect.

Respectfully submitted,

  
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Enclosures: Text Reference

CMB/dlr

Dated: August 9, 2005

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